

OECD COMPARATIVE STUDY

**REBOOTING PUBLIC SERVICE DELIVERY:
HOW CAN OPEN GOVERNMENT DATA
HELP TO DRIVE INNOVATION?**



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Introduction: Open Data and the new frontier of innovative service delivery

Open Government Data (OGD) policies, programmes and initiatives have the potential to provide a number of benefits from public governance and socio-economic perspectives (OECD, 2013). Largely praised and supported by advocates of government transparency, Open Data offers also means for developing new solutions – built on top of government data released in machine-readable formats that can be leveraged to innovate public sector processes and public service delivery. These data are normally referred to as “liquid data” which means open, widely available, and in shareable formats. Open Data has the potential to trigger a revolutionary approach on how governments think about providing services to citizens and how they measure efficiency in the service delivery as well as users’ satisfaction.

A great amount of innovation is happening across OECD and non-OECD countries as a result of the higher availability of open government data. A primary driver of this trend appears being the fact governments increasingly uptake the idea of open innovation. This implies unleashing the power of non-institutional stakeholders such as the private sector, the academic sector, the non-profit sector, as well as the public in general, to accomplish more than what the government could do alone.

Opening up government data provides indeed the opportunity to involve innovators from inside and outside governments to create innovative ways to tackle old and new problems. This has the potential to increase government efficiency and effectiveness, as well as to innovate the delivery of services and the internal public sector operations. Additionally, the use of new technology and data analytics within the public sector, and the integration of analysis in policy making and in the design of public services, can boost more integrated and innovative service delivery.

This potential bodes well with a general trend happening across OECD and non-OECD member countries articulated by Tim O’Reilly’s concept of “government as a platform” (O’Reilly, 2010). Governments’ role is changing, as governments are no longer expected to be the sole provider of responses and solutions to wicked problems that increasingly require joined-up answers. This implies the government’s capacity to act as a facilitator, providing the platform for institutional and non-institutional actors to collaborate to jointly produce common solutions.

Open government data is at the heart of this change that is taking place in governments. Since the inception of the internet, and its increasingly central role in how governments deliver services and information to citizens and businesses, governments have used data as an input into a finished “product”, i.e. a service delivered to users (O’Reilly, 2013). Government Data made available as open/liquid data are now provided to non-institutional actors who can use them to develop innovative and valuable new solutions, this directly contributing to public sector innovation. This is a new form of open and collective public sector innovation. Hence, the data become the “platform” to be used to encourage the development of new useful applications and solutions.

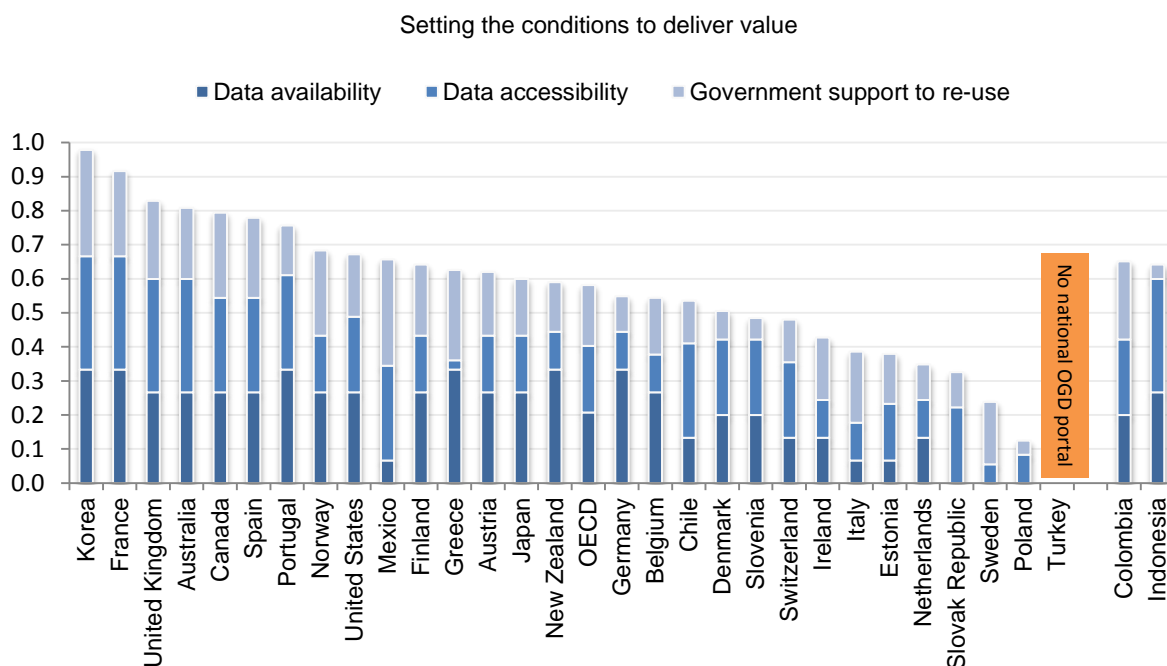
However, data accessibility and availability are necessary but insufficient conditions to deliver the expected value from socio, economic and good governance perspectives (e.g. transparency, integrity, accountability). The re-use of data by the public sector, by civil society organisations, by the private sector and by a host of other actors is a sine qua non condition to deliver the benefits of open data.

Yet, taking advantage of this opportunity has several implications. It entails first and foremost a significant change in the way governments operate and conceive their role as service providers (i.e. rethinking government’s role), which might be a long and complex process, fraught with risks: instead of being the provider of the final solution the government becomes the data steward (Helbig, Cresswell, Burke, Luna-Reyes, 2012). This implies also exploring new forms of partnerships with non-institutional actors in the creation of data and in the re-use of it to deliver for instance new services and solutions to citizens and businesses. Moreover, governments need to refine their capacity

to understand citizens' specific needs, behaviours and mental models, and to use the data to respond to these needs.

The OECD *OURdata Index* aims to help strengthening governments' focus on impact and to remember that the overall objective should not be on increasing data availability, but on actively fostering stakeholders' engagement in data reuse. The OURdata Index is based on the OECD methodology for measuring Open Government Data (Ubaldi, 2013) and on the G8 Open Data Charter, encapsulating the first set of internationally agreed-upon set of principles on Open Data. This is essential, as the OURdata Index is also intended to help governments monitor their progress in implementing their international OGD commitments. Ultimately, the OURdata Index aims to support governments in designing and implementing OGD strategies that deliver value to the public.

Figure 1. The OECD OURData Index



Data for the Czech Republic, Hungary, Iceland, Israel and Luxembourg are not available. Data for Indonesia are for 2015.

Source: 2014 OECD Survey on Open Government Data; OECD Government at a Glance 2015

This comparative study aims to highlight new opportunities emerging for public sector innovation while raising awareness on some of the main implications that need to be tackled to successfully grasp these potential benefits. The Study presents how some of the OECD countries have started dealing with these issues and how this can be of inspiration for the UAE to further advance the existing use of Open Data to foster innovative service delivery.

What innovation can Open Data foster?

Innovating ordinary citizens' experience

Open Government Data programmes, and the apps they help generate, provide tremendously helpful ways to foster new approaches to old problems, and to sustain the application of new technologies for innovative service delivery. As web 2.0 is increasingly used to improve service delivery and users' experience, open data can be regarded as a natural complement of approaches focused on citizen-centred design. The past decade has brought significant and growing benefits to

ordinary citizens through applications built on open data. Increasingly available amount of data, that could be not only accessed but also re-used, have enabled indeed to design innovative citizen experience.

However, open government data is rarely usable by ordinary citizens in the form in which they are first released. Release of government data in open formats is a crucial step, but it is only the first one needed to maximize usefulness and impact of opening up government data for the ordinary citizen. Data contains relevant information about people's lives which need to be available and accessible to all. This means it has to be presented in ways that bring to light the information it contains, and allows individuals to interact with it and incorporate such information into their daily habits and life.

Some of the biggest citizen-facing open data success stories come from the world of public transit, where many useful mobile apps have been developed using transit data released by governments in open formats. These applications have fundamentally changed riders' habits in consuming data on public transit. However, useful real-time transit apps built on government open data do more than offering a raw feed of public transport positions (i.e. GPS coordinates for buses). For example, many allow riders to search arrivals on multiple lines and to adjust their commute plans accordingly.

Weather data is another area where interesting developments have happened in 2013 in terms of improved design of mobile apps built on open data. Government weather data have been considered a public good since when governments have gained the capability to collect relevant data on weather. However, the first weather related apps used a single information model to release data to the public. This model was mainly regional, focused on large events and on weather patterns mainly because the authorities with the main pressing needs for weather data were agricultural and industrial actors. The world of weather apps has greatly evolved in the past couple of years and apps such as *Dark Sky*, *Swackett*, *Yahoo!Weather*, etc. all use the same public data, but each offer a different experience that respond to specific needs and questions of ordinary citizens: e.g. what jacket should I wear today? Do I need to bring my umbrella with me? These apps employ design in combination with open data to deliver an experience that far exceeds anything that existed prior to the 2010s (Harrel, C., 2013).

This requires not only smart technology but, even more relevantly, a new and thoughtful re-thinking of the needs of public services' users: what information (right data) needs to be provided, when (right time) and how (design) it needs to be provided. The task of making data meaningful and useful to ordinary citizens who can benefit from it is not easy, and public sectors cannot always count on the availability of the skills required. There is more to designing open data than just making it searchable and presenting it attractively, e.g. integrating data from various departments, using plain language, simple and familiar web interfaces and clear information hierarchies are just some examples. All this requires a working environment where cross-disciplinary teams work together with an open and transparent approach to the management of processes. Coders, data scientists, designers and service delivery experts in various policy areas need to collaborate to deliver single solutions to the users.

Understanding how to choose, aggregate, present and enable public interaction with the data are all key steps. Skipping any of these steps, or doing it poorly, can lead to confusion or underutilization of the released data. An interesting example is the one of *US Census Data*. Early versions of American FactFinder provided links to available datasets. This represented a valuable service and an important improvement on what was earlier available via the internet. Still it was very challenging for untrained people to walk through it. The latest version has evolved to allow returning the data to the people in a form in which they can use it.

Another interesting example is in the schools and education area. Rather than listing data on schools, most apps – such as the *DiscoverBPS*, the Boston Public Schools search app – allow

comparison across factors that are likely to be important for the family's choice of the kids' school. The innovative approach comes from using parents' perspective to decide what, when and how to deliver school related data. These apps reduce the burden on public services' users to extract the specific information they care about from public data. Design is used to make the relevant information more accessible to all ordinary citizens.

Hence Open Government Data has increasingly modified the role of the public authorities in relation to how services are being delivered, e.g. how apps are being developed. Authorities are letting the market develop most of these apps to meet users' needs while in the past they would have been the primary developers. Interestingly enough, the "market" is no longer made of private sector representatives as larger numbers of social entrepreneurs and individuals participate in hackathons movements and events to exchange knowledge and experience in order to enable ordinary citizens to interact with government data. These non-institutional actors thus contribute to changing the way services are delivered and play a key role in capturing open data's full transformative potential and delivering its value to ordinary citizens.

For this reasons, open data programmes and policies should not only focus on building public sector capacities to sustain related initiatives, but should also aim to increase the number of intermediaries that are key partners in using open data to respond to the needs of real users. Intermediaries include for example infomediaries – they have grown enormously in number in *Spain*, for instance, after the launching of the national Open Data initiative Aporta – or the "civic technology industry". This is a sort of new subset of the software industry, a collection of start-ups that challenge existing heavyweights in government technology, or creates completely different tools. The non-for profit *Code for America* has launched an accelerator program investing seed money and time into a few new companies¹. In Korea "let's shake! public data camp" hackathon having been held since 2012 by Codenam, an open community interested in maximizing the impact of Gov 2.0 to the benefit of the community.

Box 1. Datapalooza: Innovating health services in the US

Aware of the importance to educate entrepreneurs and innovators on the fact that data exists and is accessible, the U.S. Department of Health & Human Services used tactics relatively unconventional for the government such as gatherings called "Datapaloozas" hosted since 2010. The approach was to convene a group of 40 leading minds in the technology and health care arenas, and put a pile of data in the room and say: "If you had this data, what would you do with it?".

Over the course of about eight hours, the participants brainstormed different applications and services. At the end of the meeting, the authorities challenged them to come to the first Health Datapalooza—90 days later—and see if they could actually build what they had just brainstormed. The two criteria for products and services at Datapaloozas were that they had to provide concrete value and have a sustainable business model, therefore Datapalooza are not meant to showcase purely academic or theoretical proposals. The innovators showed up 90 days later with more than 20 brand-new or upgraded products and services: they had taken open data and turned it into fully functional new products and services to advance their value.

There's a mobile and Web app called iTriage, for example, that lets you enter your symptoms; then it identifies the best local provider and helps you book an appointment with that provider. iTriage uploaded the already existing online directory of community clinics, and within a year 115,000 citizens got connected to community clinics through iTriage. About 20 new or upgraded apps and services debuted at the 2010 Datapalooza, 50 at the 2011 Datapalooza, and in 2012, 230 companies have thrown their hat in the ring. The total taxpayer dollars spent building all these offerings was equal to zero. No grant was given to anybody, nothing was procured.

The HHS invested limited efforts and resources to engage in the activities mentioned above. The

¹ For more information visit: <http://www.codeforamerica.org/about/>

authorities took already existing data, put it into the public domain, made it machine readable, and in a very inexpensive fashion let people know it was there. American entrepreneurs and innovators did the rest at blinding speed. As for the publicity part, Datapaloozas were publicised over the net and through social networks. The then HHS CTO and now Federal US CTO, Todd Park stated in an interview released in 2012 that Datapalooza had two important effects: “One, it inspired entrepreneurs and innovators to get involved; and two it gave to the authorities the ammunition to liberate more data”.

Source: <http://www.mckinsey.com>

Building the next generation of empowered civil servants

Innovation in service delivery achieved through Open Data can not only result from the re-use of data by private sector actors or by civil society organisations. It can also be produced thanks to the re-use of government data by civil servants, who have in several instances taken the initiative to develop new mobile applications. The use of technology and data analytics within the public sector, and the integration of analysis in policy making and design of public services, can boost more integrated and innovative service delivery. This requires however availability of specific capacities among civil servants, at all levels.

Equally important to empowering citizens is in fact empowering the public sector workforce. Opening up government data can enable civil servants, many of whom are frontline professionals, to participate directly in ensuring that government supports open innovation, and to develop applications that better respond to users’ needs. Many civil servants see the real time performance and impact of public services and public policies on citizens, and would be able to generate appropriate data and other inputs, or use available ones, to improve service experience if they were given the tools and incentives to do so (for example, by being enabled to participate in a professional capacity in online social networks to offer advice and knowledge to the public) (Ubaldi, 2013).

Moreover, many civil servants also see a blurring of their personal and professional lives in terms of the tools they use, such as smartphones. This fact could improve their performance through the two-way exchange of experience and skills. Sensible structures are needed to ensure that civil servants are empowered in this way while they are also able to retain impartiality and a position of trust both from the government itself as well as from citizens. This also requires that civil servants be equipped with the necessary skills, tools, mechanisms and guidelines (Millard, 2012).

Empowering civil servants with OGD requires strategies and programmes to build the next generation of civil servants. New skills are needed, which are not only strictly IT related. They should include: data science; predictive analytics to identify patterns and create models; a better knowledge on how to use web 2.0 technologies for social engagement and to negotiate and connect to people; and a finer understanding of emerging problems and of the use of IT to solve them (*e.g.* cybercrime investigation). As an example, the **Dutch** police force, in collaboration with Deloitte and a forensic consultant (ForensicPlaza), co-produced a programme known as “Awareness & Digitalization”. This programme is intended to provide a flexible and innovative way to raise the police force’s awareness of risks and opportunities in the cyber environment and to develop their skills in dealing with the emerging challenges of an increasingly digitalised society.

Innovating public procurement

Open Government Data has not only paved the way to new forms of service delivery. Additionally, OGD has helped highlighting some of the deficiencies in existing procurement processes of solutions needed by governments to deliver services and information.

OGD, and the changes it is provoking in terms of service delivery, have also a considerably relevant potential impact on how softwares and technological solutions are procured by the public

sector. Instead of purchasing softwares, governments go around the traditional procurement process by providing data to engage outside developers to develop apps, for instance through hackathons or apps contests. This is extremely useful to capture optimal technology solutions and the latest thinking on how softwares and services are developed and deployed to best respond to the needs of the users of public services. As a result, services are not more responsive to users' needs but can be delivered more efficiently and effectively, thus producing gains for both the public sector and the final users.

The traditional public procurement process is indeed often regarded as cumbersome and complex and therefore not ideal to take advantage of new technologies – and new technologically driven solutions – to innovate government operations. Nevertheless, a note of caution is needed. Releasing open data and involving outside developers to gradually develop solutions may not be the right approach for the development of all government IT systems. It may efficiently support the generation of emergent customer-facing applications but it may not substitute standard procurement when governments have specific needs or detailed requirements on how a solution or app should be built and operated.

Evolving public sector internal dynamics

The OECD Working Paper “Open Government Data: Towards Empirical Analysis of Open Government Data Initiatives”, highlights that OGD has the potential to increase government efficiency, effectiveness and innovation in service delivery and internal public sector operations. Even though the release of government data online can raise a number of substantive enquiries in terms of government activities that require time to be addressed, from a service delivery perspective data re-use can also lead to a significant decrease of the questions routinely received by public authorities, or enable questions to be answered more quickly. Additionally, the remaining questions concerning service delivery *per se* would be easier for civil servants to answer as the relevant information would be easier to find. Subsequent benefits include reduced workload, a reduction in paperwork and lower transitional costs. Services are also improved as people more easily find and claim the benefits they are entitled to, and public sectors can tune front-line services more closely to individual needs and behaviours.

The *Dutch* department for cultural heritage is, for instance, actively releasing their data and collaborating with amateur historical societies and groups such as the Wikimedia Foundation in order to execute their own tasks more effectively. This can result in improvements in the quality of data, while encouraging external inputs and new sources of knowledge, possibly making them more innovative and comprehensive. In addition, one could argue that the co-development of knowledge in this case increases not just the quality, but also the awareness of the Dutch public authority's work, thereby further increasing its value and relevance. Similarly, the *Bristol City Council* reduced the typical service transaction cost (15 times less expensive) by introducing the Open Government Data Catalogue¹.

OGD can also help foster collaboration across and within public agencies and departments. As shared datasets and/or registers are being created, collaboration and exchange on who owns what public information and for what purpose is needed, which provides an opportunity to also re-engineer and simplify internal procedures, and/or automate processes and as a result eliminate redundant expenditures or reduce internal transactional costs. Furthermore, as public resources are freed from having to maintain individual registers and datasets they can be reallocated to more productive tasks.

Finally, improved service delivery can also emerge as a result of initiatives originally driven by a government's push for greater transparency around data. In the *UK*, for instance, discussions between the Department of Transport and Trade Association for Train Operating Companies (ATO) led to free access to the fares databases in early 2013. This enabled the development of price comparison websites and mobile phone apps for the benefit of passengers who can access accurate information and find the ticket they need at the best price².

Predictive Data Analytics helps spotting emerging governmental and societal needs

The enhanced ability to combine different datasets can help develop additional, more innovative and better products and services. Mixing public data with commercial, civil society and citizen input data, and pooling and sharing with those produced by other public agencies and/or levels of government – *i.e.* data sharing for developing shared content, services and policies between cities or countries – holds considerable potential for public value creation. Authorities points to the need in the future, not just for “big data” drawing on citizen inputs and facilitating data analytics, for example to develop and simulate public policies and better target services, but also for a more qualitative approach including ethnographic surveys. A need is thus foreseen for both big quantitative data crunching to provide explicit codified evidence for public sector activities, on the one hand, as well as more qualitative survey data to contextualise “big data” to provide the necessary implicit and un-codified evidence. Public sectors are still struggling with the development of the skills the public sector needs to conduct data analytics and make the best use of data analysis, as well as to cross link data and sources. This is essential to spur open government data use by the public sector that drives better decisions, informs policies, supports the development of data driven processes and services, and delivers more innovative services (Ubaldi, 2013).

Over the last decade the private sector has increasingly used data analytics to target the delivery of goods and services. There is much governments can learn from the private sector on how to combine the use of data and the latest technology to achieve the delivery of modern and personalised services targeted to the needs of users. As an example, Facebook’s model builds on personal interaction through messaging. The lesson for the non-commercial world could be, for instance, that it is important to establish channels that are basically push mechanisms for information, or retrieval mechanisms for complaints and comments. This can help to improve government performance. What’s missing, however, would be the dialogue, not so much between people themselves, which often happens anyway, but between individual citizens and governments. This requires structuring, tracking, tracing and personalising answers to the input received by local officials at the right level in the government rather than by an anonymous agency or ministry. This requires time and effort, but provides potential wins for citizens, as well as for the government. It can move governments from one size fits all to segmentation and finally to personalisation.

In the **UK**, the National Diabetes Audit toolkit is used to analyse the diabetes audit data. Full information on the data included can be found at:<http://www.ic.nhs.uk/services/national-clinical-audit-support-programme-ncasp/diabetes>. Data is from primary care, secondary care data sources are linked, data quality reports and data analysis provided. Data can be stratified and analysed in many different ways, e.g. sex, age, ethnicity, deprivation. The information comes from General Practitioner (GP) practices, Primary Care Trusts (PCTs), Strategic Health Authorities (SHAs) and Hospital diabetes units, Specialist Paediatric Units and HES / PEDW.

Advanced data analytics is used in **NYC** to better target fire, safety and health inspections (“saving tax-payer money and saving lives”). NYC receives over 20.000 complaints per year for “illegal conversion”, *i.e.* properties that house more people than is considered safe. Historically, the around 200 inspectors at the Department of Buildings would find serious high-risk conditions at 13% of inspections. Recently, the Department started cooperation with about 19 other NYC agencies. They cross-tabulated enormous amounts of additional data on the individual properties and used the results to guide inspections. The result is that now between 70 to 80% of inspections discover high-risk properties, upon which actions can be taken.

Moreover, NYC mayor office used advanced data analytics and combined data from several of the city’s departments to boost predictive data analytics is helping saving lives and taxpayer dollars in

New York City², thus facing deplorable housing conditions that are hazards to individual and public health.

Results include:

- A five-fold return on the time of building inspectors looking for illegal apartments.
- An increase in the rate of detection for dangerous buildings that are highly likely to result in firefighter injury or death.
- More than doubling the hit rate for discovering stores selling bootlegged cigarettes.
- A five-fold increase in the detection of business licenses being flipped.
- Fighting the prescription drug epidemic through detection of the 21 pharmacies (out of an estimated total of 2,150 in NYC) that accounted for more than 60% of total Medicaid reimbursements for Oxycodone in the city.

Promoting collective learning, collective intelligence and social participation in service delivery and policy making

Encouraging the emergence of more advanced features, beyond simple delivery of data, can foster a collective learning process. For those desiring to build interactive sites, the barriers to entry are remarkably low once government data is conveniently available. Web hosting is inexpensive, software building blocks are often free and open source, and new sites can iterate their designs rapidly. Successes thus far (*e.g.* the Govtrack.us site built by Joshua Tauberer³), show that significant resources are not required to enter this space.

But, furthermore, the expanding use of new technologies, combined with the emergence of the OGD movement, are becoming key enablers of higher public engagement in service delivery. OGD initiatives, particularly as they are supported by Web 2.0 and social media applications, are creating an architecture for participation that enables users not only be active contributors to the development of innovative content and apps, but also to collaborate with public entities in delivering services with innovative arrangements.

² <http://strata.oreilly.com/2012/06/predictive-data-analytics-big-data-nyc.html>

Box 2. San Francisco improves service delivery to disadvantaged youngsters

In the city of San Francisco the heads of the foster care, juvenile probation and mental health departments, crafted an agreement with the city's attorney to permit the limited exchange of case information among agencies. The sharing enabled a new level of care for children interacting with any of these agencies. Case coordination improved, invisible populations emerged (overlapping clientele). This was made possible by the fact that the new integrated data system recognises and focuses on the families that are most vulnerable, most troubled and most in need. Prior to data integration and data analysis the agencies had not realised that only 2,000 users of services were using half of the resources of the department, and most of these families lived within walking distance. As a follow up, the Human Service Agency concentrated delivery of services in specific neighbourhoods and co-located services at community centres, and this improved efficiency.

Results included savings and better service delivery. Analysis of linked data enabled a better assessment of needs of high risk youngsters diverting them from negative future events, the understanding of where youth were falling through, identification of what services were needed to intervene earlier and prevent negative outcomes. Initially supported by a low-tech system the system was transferred to a more sophisticated platform to enable the three agencies to better understand the overlaps among their users. The cross over users of multiple systems were at higher risk of committing a crime (51% of San Franciscans involved in multiple systems were convicted of a serious crime, 1/3 had been served by the three agencies and 88% of these youth committed a crime 90 days after having become a cross over user - a critical window of opportunity for the case worker to intervene. A report produced highlighted a specific following need was identified: the need of a web-based integrated case management system to make this connection in real time.

As services started being delivered by non-institutional care providers, the awareness grew of the need to balance the right of excellent care with the right to privacy protection. Hence, the need to carefully avoid sharing un-needed information. What made it so difficult where legal related matters the good results convinced the district attorney's office that the integrated database could support better prevention services and gave the authorisation through a new statute that justifies the sharing of records on youth at particularly elevated risk levels. The school district decided to join to target students with high probability of dropping out to structure early intervention. Multi perspective on client's risk and identify protective factors. This can help agencies to determine which programmes are more effective, who needs to be targeted (most vulnerable, in trouble and in need) and how to coordinate the responsibilities.

Source : OECD

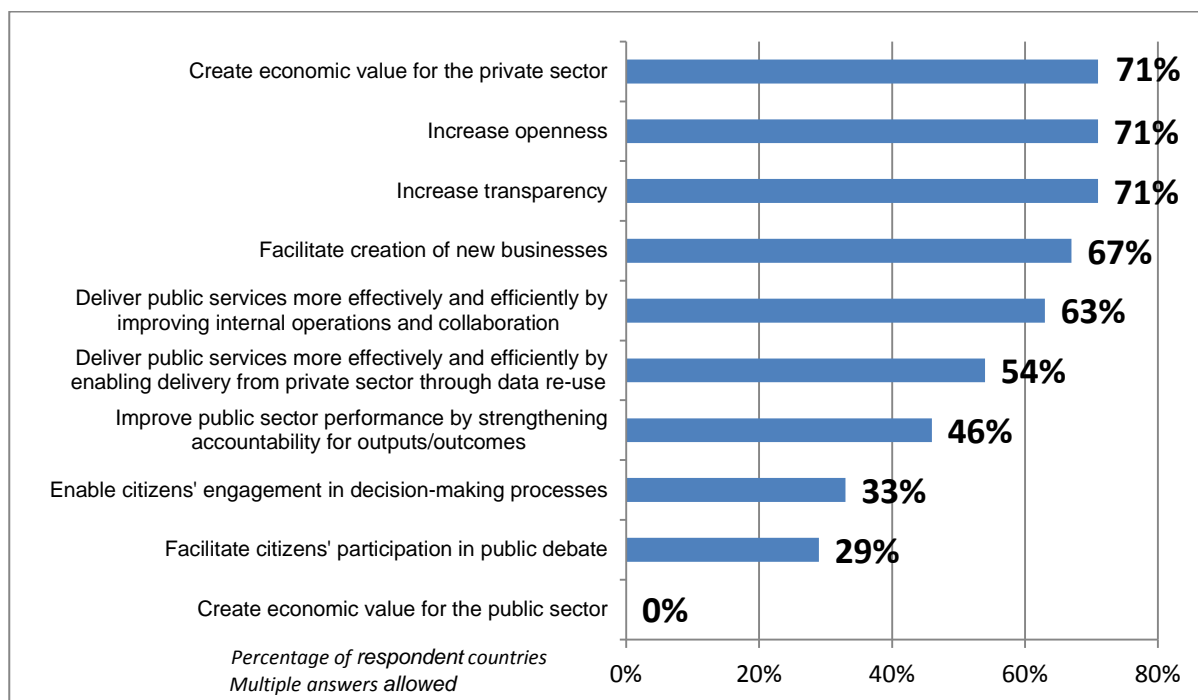
Maximising value and capturing impact on innovation

After the initial concerns on the importance of addressing issues related to governance and policy frameworks, institutional matters and development of single repositories (e.g. open data portals), OECD countries are now focusing on capturing the benefits of OGD. These include potential impact on innovation of public service delivery and public sector internal processes as highlighted above. The sections below underline some priority actions that governments should emphasise to maximise impact and realise the expected benefits.

Scaling it up to make it sustainable

OECD countries rank improved service delivery among the top priorities of their OGD policies (see Figure 2).

Figure 2. Top 5 principal objectives of the Open Data strategy/policy



Source: OECD 2013 Open Government Data Survey.

Nevertheless, in order to increase the impact of OGD on innovation it is essential to scale up initiatives and focus on promoting the re-use. In the US the earlier mentioned Health Data Initiative was “cloned” in other sectors, such as energy, education, and public safety. For example, the Safety.Data.Gov was launched with 700 data sets that relate to all aspects of safety: transportation safety, product safety, community safety, consumer safety, industrial safety. The first Safety Data Jam hosted 40 innovators. As mentioned previously in this study, software development contests, information sessions for businesses and citizens, training events for users, organisation of co-creation type of events, and data promotion to journalists are all activities that have been used by OECD governments to foster re-use of data in the society. However, to maximise the value of OGD is it important not to forget a key group of potential data re-users: the civil servants.

The creation of a category of empowered civil servants is one of the innovative effects of Open Government Data, as discussed in the previous session. To achieve this result, it is however very important to foster a culture sustaining the use of data to innovate “business processes” and collaboration within the public sector. This implies building the capacities to re-use data to innovate (e.g. build data analytics capacities) and to improve performance (e.g. releasing data and implementing OGD policies considered essential as part of the performance indicators framework, policy).

The *UK* has created a group “advisors” (the Open Data User Group) collaborating on a permanent basis with the Cabinet Office on open data related matters. The *US* have tried to foster entrepreneurship in government, using a philosophy called “lean start-up”. Government is obviously not a start-up, but initiatives to effect change are best thought of as start-ups. A Small interdisciplinary team was established in the US with the idea to develop and market the simplest possible apps that consumers would actually use. The idea of starting small was to provide incentives for the officials to start learning from actual experience and then iterate rapidly. Cycle times of updating product are days or weeks – not months – long.

Clearly, this approach contrasts the traditional mode of making change happen in a large public sector organization, which is the “waterfall” process: spend a good number of months coming up with some strategy, another good number of months doing an operational plan, then six more months to build a systems plan, before launching something that might as well not be successful. The mode of operation in this case should instead be iterative, rapid and prototyping process. Requiring small investments in terms of time and resources, the lean “start-up model” enables the public sector to accept failure. It is as a matter of fact considered as the best risk-management methodology one could adopt; as the cost of failing is little.

Many practitioners believe that it is less about training and more about giving officials permission to do what they intuitively understand is the smart thing to do. There are many potentially talented innovators and entrepreneurs in many governments and if they are given the signal that they can do it in a different way, they will. More than technical trainings providing them with case studies, principles, tools in an environment that authorises innovative actions.

Improving impact and measuring capabilities

We have discussed previously how open data can be leveraged across the administration and levels of government to provide context and insights that can inform the performance improvement agenda. A key first step to efficiently use open data to solve problems and improve performance is however to make sure we know what is the “question” we are trying to answer, the problem we would like to solve and/or the improvements or impact we targeting and therefore wish to measure. This can indeed support the prioritisation of datasets to be released in open formats and the subsequent assignment of resources to such end.

Clarifying what is the key question, or problem that data users are trying to solve and/or answer can help understanding which data need to be captured, reviewed and analysed to better grasp the problem, identify relevant data to measure the performance in delivering the service. We elaborated in a previous section how technology combined with the increasingly available open datasets can help identifying patterns and relationships, correlate data across departments and agencies, and present the most relevant information. This can greatly help monitor when performance is moving towards a negative direction or vice-versa to be able to take quick actions. Partnering with non-governmental organisation to present data may also help increasing public understanding and appreciation of data and improve impact and performance.

In the changing open data context however, new datasets become relevant to assess and measure performance in service areas. These data are often input to be provided directly by service users, often through mobile devices or social media platforms. This input and feedback are often provided in real time and the impact of improved service delivery is expected on a timely basis. For this to be done, however, governments should have the right capacities in terms of HR resources – numerous enough and adequately trained – to skim through feedback, select the relevant ones and turn them in a timely fashion into real input for service delivery improvement.

Last but not least, results achievement requires the capacity to assess results and progresses. According to the 2013 OECD OGD Survey the vast majority of OECD governments (96% of the 27 countries that replied) has not yet adopted a methodology to measure return on investment on OGD (e.g. potential cost savings, value for new services, more efficient and innovative service delivery).

When asked “Does your government track the economic and/or social gains from the re-use of open government data (e.g. case studies, inventories, surveys, new business creation, market growth)” 80% responded negatively. Among those that responded positively, most do not assess gains through a thorough and solid methodology but more on an *ad hoc* basis. ***New Zealand, the UK, Norway*** and the ***Netherlands*** do it through Case Studies. Additionally, Norway tracks gains also using surveys focused on the effect of released open data on executive decisions; ***Finland*** does it based on users’ statistics

provided by the organisations that release open data; and the *UK* by interacting with the arms-length bodies which are responsible for making sure that the data released is used to grow the economy. With time it will be essential for these efforts to be included in a more structured and solid way to appraise benefits and value creation, which will also help establishing clear business cases for the release in open formats of new datasets.

Unleashing the potential of Open Data in the UAE

The policy context for OGD implementation in the UAE

The UAE government is developing a culture of using empirical evidence to ground public policy and service quality debates. The political leadership offers strong support and commitment to the values embedded within the OGD initiatives such as transparency, citizen participation and government accountability. OGD is indeed in line with the country's top national agendas as identified in the UAE Vision 2021, the UAE Government Strategy (2011-2013) and the national strategy for innovation⁴ that clearly call for such practices. The adoption of a focussed Strategy complemented by a Plan of Action could help the Government in prioritising selection of datasets to be released in open formats and ensure consistency of efforts across the administration.

The above is particularly relevant as important emphasis is increasingly being placed on implementation. To start with, a large amount of data is publicly available on the UAE Open Government Data website (bayanat.ae)⁵ created on the existing government portal (government.ae), as well as in offline formats. Additionally, several government entities have started sharing a good amount of their data in open format on their websites. Official administrative data in policy areas such as education and healthcare are relatively easy to locate and use. The National Bureau of Statistics (NBS) is developing statistical systems on economics, demographics and the environment. Statistical expertise and extensive use also takes place at the level of individual Emirates (e.g. the Statistics Centre Abu Dhabi, SCAD, and the Dubai Statistics Centre, DSC). Many federal and local government entities across the country have already started publishing open government data and engaging citizens in designing government policies and services. The Federal Authority for Nuclear Regulation (FANR) published the draft Guidelines for the Design, Construction and Operation of Nuclear Power Plants for public consultation⁶.

These achievements have benefited from mature government technology capacity and from a history of important results in the area of e-government, which have been leveraged as a starting point for OGD initiatives. A number of challenges, however, need to be considered to make sure “open government data” is perceived as a political issue, rather than a technical one. Securing benefits from OGD implies indeed dealing with a number of challenges of different nature, as highlighted in the paragraph below.

Overcoming the main challenges to maximise OGD impact

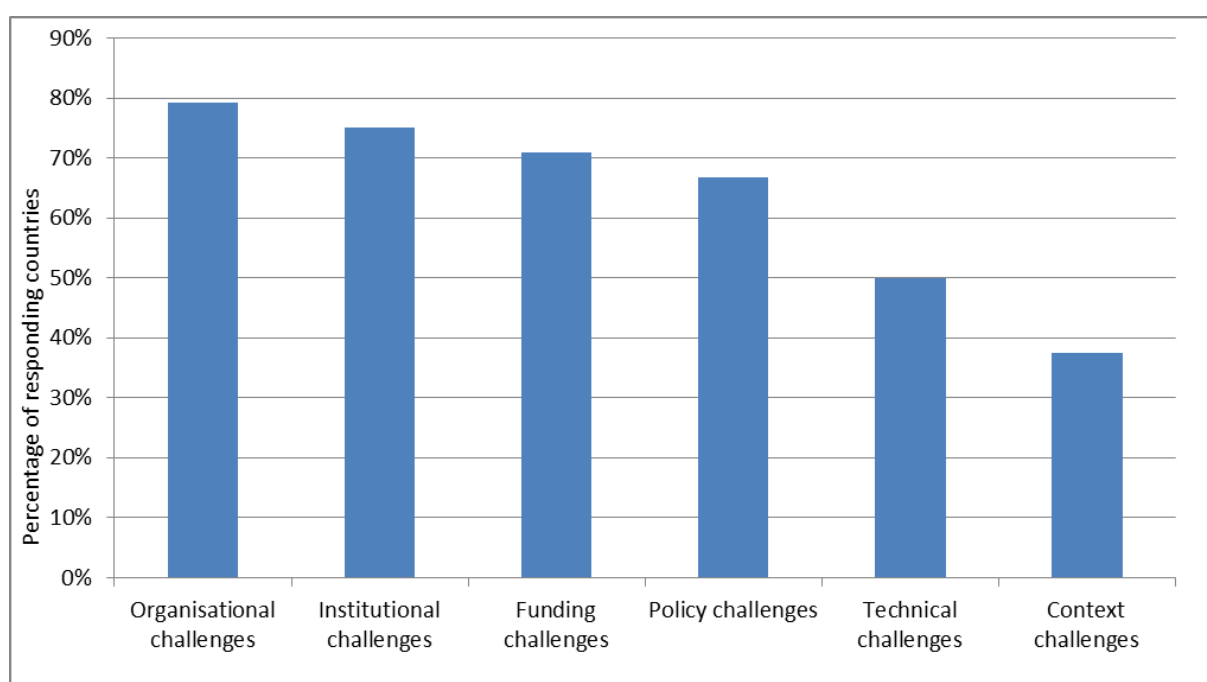
The following challenges that OECD countries typically face when implementing OGD initiatives, can help frame the discussion also in the UAE (Ubaldi, 2013):

- Technological challenges, relating to the format of documents, accessibility of data and documentation, ICT skills and ICT diffusion levels across the public administration and general public.
- Economic and financial challenges, especially in cases where statistical offices and line ministries fund parts of their activities through sales of statistical data. Alternative funding models to sustain the activity of such bodies should take into account the economic and social value creation of data outside the public sector.

- Organisational challenges, when it comes to incentives for collaboration and sharing across government as well as engaging non-government communities. This closely relates to cultural issues around openness, accountability and existing experience in using evidence to scrutinise government actions.
- Legal challenges, which relate to copyright and licensing, but also to upholding the right to privacy of individuals and the right to business secrets in the private sector. Exceptions to “open data” policies must be well defined in order to strike the balance between opportunities and risks of publicising public sector datasets.

According to the 2013 OECD OGD Survey the main challenges to the further development of OGD initiatives are not of technological nature, but more related to organisational and institutional issues, funding matters and policy issues (see Figure 3).

Figure 3. Principal challenges to further development of OGD initiatives



Source: OECD 2013 OGD Survey

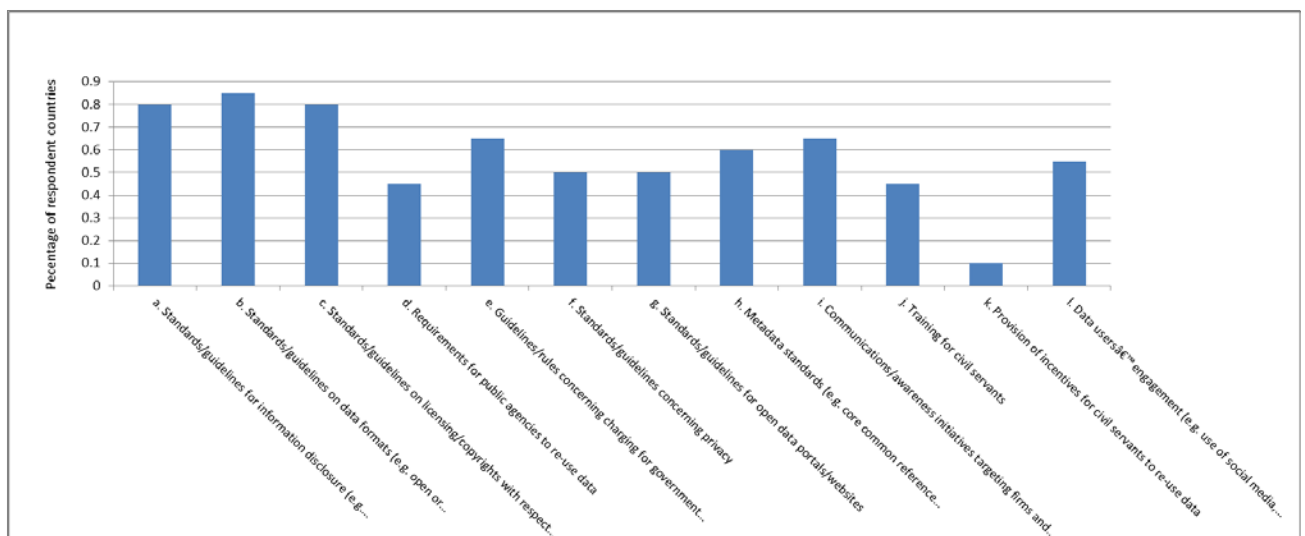
Creating the right level of awareness and capacities within the public sector is indeed essential to capture the value of open data. From an internal perspective, it is often a matter of organisational challenges due to poor cooperation between government agencies, which can be mainly caused by cultural barriers, variations in agencies' readiness and education on the topic on various levels, lack of necessary policies and legislation, a culture within public entities considering datasets as classified assets by nature and uncertainties about the value of OGD for these agencies (T. Davies, 2013; Ubaldi, 2013). Other less-concerning challenges include practical and technical issues related to data exchange across government information systems and the design of open data portals.

As in many OECD member countries, the challenge ahead for the UAE is to streamline dispersed efforts. To this purpose, in 2011 the UAE federal government published a set of “open data principles” in 2011⁷ as well as the “Open data guidelines for United Arab Emirates Government Entities”⁸. To support consistency in results and address issues related to different levels of preparedness, this document aims to present a number of guidelines federal entities should follow when adopting open data policies on their websites.

Across OECD countries, good international practices of open government data policies and principles include countries such as the *UK*, the *US*, *France*, *Chile*, *New Zealand* and *Mexico*, among others, where the development of open data portals and related initiatives, as well as the provision of guidelines, have been supported by strategic decisions and efforts to create the right ecosystem of actors needed to produce the desired value (see also paragraph below on the ecosystem’s engagement). This takes into account also refining the capacities available within the public sector not only to produce, release, analyse and use data, but also to understand the demand and boost data-reuse. These efforts have however been sustained by political support and commitment at the highest authority level, e.g. by the Centre of Government. The need to deliver key messages on the value of open data to decision makers and policy designers across government entities is critical to secure the support needed to ensure long-term sustainability of initiatives.

Still, the focus on adopting internal measures to change processes and dynamics within the public sector does not seem to be as strong as it should be across OECD countries. According to the graph below (Figure 4), increased efforts should aim to require data re-use within the public sector, adoption of incentives for civil servants to re-use data and training of civil servants.

Figure 4. Elements part of the central government OGD strategy/policy



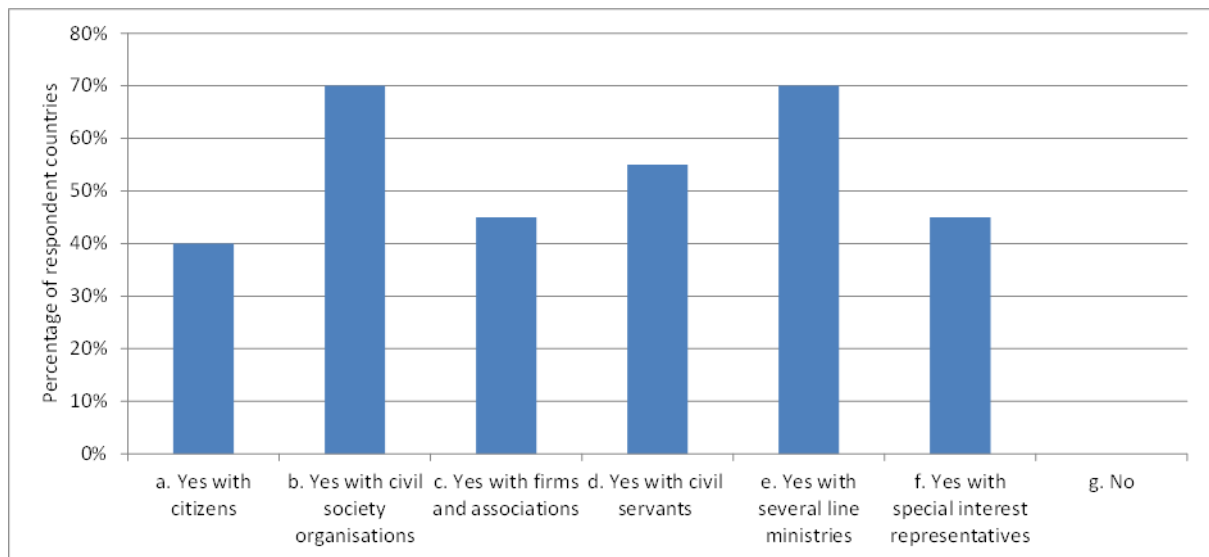
Source: OECD 2013 OGD Survey.

Raising public awareness and consulting data users

Open data initiatives seek to create value by making government data publicly available on public websites, or “open data portal”, in ways that enable individuals to easily access and re-use the data without having to make a request to the government. Reaching out to the public to solicit input on the government open data provided (i.e. public consultation) and encourage re-use of the datasets (i.e. public participation) is a critical strategic action to secure value creation. This requires identifying an ecosystem of actors that goes beyond government’s boundaries to include parties like citizens, private sector entities, applications developers, academic, researchers and civil society organizations (Ubaldi, 2013). The idea of establishing a community of possible open data stakeholders across the UAE should be considered as a crucial success factor to maximize impact of OGD initiatives. Such community would help nurturing the ecosystem of actors that need to come together and work collaboratively to re-use data and crowd-source ideas to find innovative solutions to existing and emerging policy problems.

The 2013 OECD Open Government Data Survey shows that in OECD countries OGD policies and guidelines address also matters of awareness raising and communication targeting citizens and businesses as well as engagement of data users. Another important measure enabling to capture the view and feedback of the actors expected to re-use that, and thus contribute to the development of innovative practices, is to consult with stakeholders in the formulation, or review, of the OGD strategy. Figure 5 shows that across OECD countries the most consulted in the development of OGD strategies were ministries, civil society organisations and special interests' representatives (i.e. lobbyist), while the least involved appeared having been individual citizens, who have supposedly more problems voicing out their needs and views.

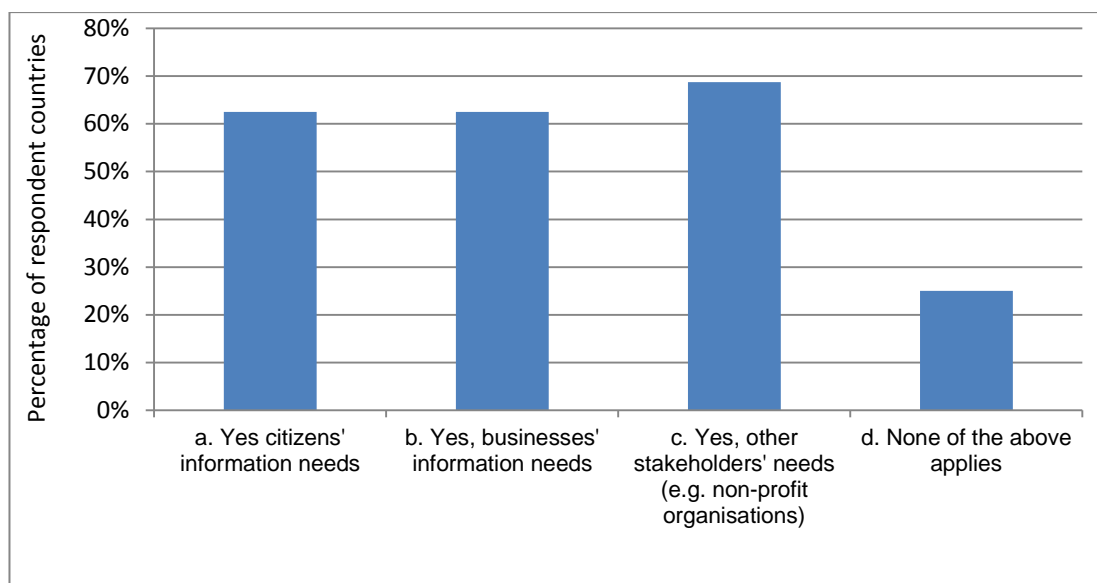
Figure 5. Was central/federal OGD strategy/policy developed in consultation with stakeholders?



Source: OECD 2013 OGD Survey.

Being open to feedback on the relevance of the released datasets is essential to ensure provision of valuable data to the actors who are expected to re-use them to create value, included through provision of innovative products and services. According to the 2013 OECD OGD Survey (Figure 6) most OECD governments consult regularly with users on their needs and preferences on the type of datasets to be released. Consulted stakeholders include citizens, businesses, as well as non-profit organisations. This is something the UAE could focus on doing, to engage various communities in the different Emirates. Improving knowledge and understanding of the needs of data users' can help support the development of innovative ways of delivering services particularly to those segments of the population with very specific needs, e.g. disadvantaged citizens, women, youth, specific parts of the business community.

Figure 6. Does your government regularly consult users on their needs and preferences for the type of data released?



Source: OECD 2013 OGD Survey

Several channels are being used by OECD governments to consult with data users and capture their feedback. Many OECD countries, such as the *US*, *the UK*, *Canada*, *Chile*, *Portugal*, *Korea* leverage online and in-person consultation activities to reach out to the open data community and to civil society to seek suggestions on how to improve the delivery of open data and, in particular, asking them for suggestions regarding which datasets they would like to see released. This has been done via face-to-face roundtables discussions, online consultations, Twitter Town Halls, contests and Google Hangouts.

In addition, on an ongoing basis, open data users are encouraged to request datasets at any time through the open data portal. Coupled with this, many public agencies and organisations, which have opened up their data are in regular consultation with their users - using similar methods to those mentioned above. In *Finland*, for instance, the Ministry of Justice organises workshops and discussion forum for citizens⁹.

In *Estonia*, a “Working group of Interoperability” was established in Parliament; the *UK* set up the Open Data User Group, who looks at data requests from companies and lobby government to release more data. In *France*, the OGD Roadmap adopted in February 28, 2013, prescribed public debates which complement Etalab’s regular use of social media, open forums on the national open data platform, regular meetings with various stakeholders and evangelization events (such as barcamps, hackathons, etc.) to engage users and gather feedback.

Stimulating engagement and participation to spur innovation

The quality of data and its impact on value creation and social innovation increase with the number of people using it. This is an additional reason to foster opportunities to encourage individuals and groups of users to create applications based on re-use of data that make sense to them. In order to engage the various stakeholders in value creation, public entities often develop data-supported online applications and services that let users view and manipulate released data and often provide online forums and message boards to allow feedback from people who use the data. The *Office of Legislative Oversight (OLO)* in the *United States* examines regularly how the various jurisdictions have implemented open data initiatives and how these initiatives have resulted in the creation of software

applications or “apps” that benefit communities. This example could be replicated in the UAE to gauge the progress made by the various public entities, or in the various Emirates, to implement open data and to spur internal competition. Similarly, contests where individuals or organisations can compete in producing, using or visualising data in ways, can help reform the delivery of public services and information: *New Zealand’s “mix & match”* and *Germany’s “App für Deutschland”* are just two of many examples across the OECD.

Additionally, there are several examples of innovative services to support people with specific needs developed across OECD thanks to new datasets made available upon request of higher availability of relevant data, include:

- In **Australia**, one of the early Internet and smartphone applications built using government data is the “National Public Toilet Map” (www.toiletmapp.gov.au). While its value might not be intuitive to grasp, the application can be an important resource for people suffering from incontinence or people with reduced mobility. (more info: <http://www.brisbanetimes.com.au/federal-politics/blogs/public-sector-informant/hats-off-to-hackers-20120606-1zvqb.html>)
- In the **Netherlands**, government data was used to create a web service and smartphone applications that help locate the nearest public defibrillator in case of a heart-related emergency. <http://aed4.eu/?language=en>
- In **Germany**, public sector data and crowd collaboration contribute to the successful web service and smartphone apps “Wheelmap”, which helps people with reduced mobility get around in cities. Routes, places and transport options are labelled in terms of their ease of access for people with wheelchairs. The service is now being expanded to other countries, e.g. the UK.
- Also in **Germany**, the municipality of Hamburg publicised detailed geospatial information on all child day-care facilities. Residents can access an online map and find out about the facilities in their vicinity, plus details about the offer: <https://gateway.hamburg.de/hamburggateway/fvp/fv/BSF/KitaInfo/wfKitaKarte.aspx?Sid=95>
- Similarly, in **France** this map allows visualisation of accessibility of places of public interest, e.g. municipal buildings, sports facilities, schools, cultural sites. <http://diouck.esy.es/accessibilite/accessibilite.html>

Although important first steps have been undertaken from this perspective in the UAE, the OGD initiative has not yet provoked a surge of attention to government data, particularly in light of its potential value for improved service delivery. The Open Data Portal enables to see all apps that have been developed by the Government and allows for public participation. Nevertheless, interactions and feedback on the relevant section of the national open data website of the government portal have been very modest in the past. However, things are also rapidly evolving. A first estimate of the potential for the UAE finds that the “UAE economy can gain an estimated AED 1.7 billion in 2014 by establishing policies and strategies to enable government sharing data with businesses, entrepreneurs and academia, an approach that is fully aligned with the Smart Government initiative.”³ To better seize such opportunities, Dubai will soon have its own branch of the UK Open Data Institute¹⁰. The purpose is to create hubs for companies, universities and NGOs to support open data projects and communities, an example that could be replicated elsewhere in the UAE.

³ For more information see: <http://exantium.com/?p=332>.

As in many OECD countries, there is a lot of space in the UAE to hold a wider public debate about the resources and capacities needed to make better use of open government data which is being fostered for example through the World Government Summit hosted every year. This discussion should involve actors at different levels of the government, as well as stakeholders. Ensuring data quality (i.e. data that are up-to-date, accurate and complete), and comparability within countries, is equally important as it is guaranteeing data accessibility in order to capture its intrinsic value (Ubaldi, 2103). It should be clear that “open data” initiatives continue to be an experiment also across OECD countries. Hence the general public is likely to use government data in ways that are different from those foreseen by governments. Therefore, there should be readiness to accept surprises in the production and use of public sector data, a certain level of tolerance and capacity to manage credibility and accountability risks. Many governments are taking measures to protect themselves from the risk to their credibility and accountability that may arise when a mix of linked open datasets (i.e. a combination of open government data with open data produced by other sources) are used to deliver services to the users. *France*, for instance, just released a new version of the national Open Data Portal (www.gouv.data.fr) that enables non-institutional actors to upload data collected or produced by them that can be linked with open government data to produce innovative apps or services. The government’s credibility and accountability are ensured as only the data provided by the government are released as certified open government data.

Linking open government data with evidence-based policy making

For the impact of OGD initiatives on innovative service delivery to be maximised it is of absolute importance to strategically link open data to evidence-based policy making and improved service delivery. By linking the various programmes, the achievement of strategic objectives can be reciprocally reinforced. For example, the need to understand trends in societal needs and in the use of specific services can guide prioritisation of datasets to be released in open formats and analysed as linked data sets. These practices are not new, but they have re-gained a stronger impetus thanks to the advent of OGD movements. The example in Box 3 is a powerful illustration of how open and transparent use of data helped reforming *Germany*’s national education system.

Box 3. The PISA data "shock" in Germany as a trigger of education reforms

Publication of results from the Programme for International Student Assessment (PISA) in 2000 sent shockwaves through Germany’s education system. Politicians, teachers, parents, students were up in arms over Germany’s unexpectedly low score (below OECD average in the performance of 15-year olds in reading, mathematics and science).

The case perfectly illustrates the constructive force of policy-relevant evidence. The “PISA shock” as it is usually termed in Germany triggered a national public debate about education policies and the provision of education in Germany (which is largely a competency of the regional *Länder* government authorities). Taking the data published by the OECD as a starting point, a number of wide-ranging reforms were designed and implemented. The PISA results in a way helped create buy-in from federal and regional governments, teachers and parents’ associations towards the achievement of a common goal – that of improving the education performance of Germany’s students.

The reforms did not address all deficiencies in Germany’s primary and secondary education systems. So it is that the inherent reinforcement of socio-economic inequalities in early education remains, mostly due to “path dependency” and cultural factors. Nevertheless, the reforms initiated after the “PISA shock” in 2000 gradually improved Germany’s position amidst OECD and other high-income countries. The latest assessment in 2009 places German students within the average of OECD countries for reading, and above average for mathematics and science.

Source: authors, based on data from the OECD Programme for International Student Assessment (PISA).

A woman in **Denmark** built, as a private citizen, **findtoilet.dk**, which shows all the Danish public toilets, an important piece of information for people with incontinence. This is a similar example to the one from Australia mentioned above with the relevant difference being that this was developed by a private citizen, a woman, motivated by a personal health problem shared with a number of other women. This proves the fact that there are opportunities to foster the release of relevant gender specific data to better understand how data can help address specific issues (see Box 4).

Box. 4 Leveraging open data to better manage gender related issues

Violence on women remains a major unresolved issue across the world. Data on violence against women are difficult to collect: it's a sensitive topic which requires careful methods. And it's not always given priority in the statistical data collection plans of countries. Even when countries do collect data, survey methodologies are not always comparable across countries.

The international community is making progress in improving these data. This year, new guidelines for producing statistics on violence against women (PDF – 1.2Mb) were launched by United Nations Statistics Division. These provide national statistical agencies with practical guidance on collecting, processing, disseminating and analysing data on violence against women.

The forthcoming Minimum set of gender indicators, selected by the Inter-agency and Expert Group on Gender Statistics (IAEG-GS), also includes specific indicators on violence against women, providing countries a clearer idea of what data need to be collected.

Increasing access and comparability of current gender related data is an essential step to enable the development of innovative ways to respond to this societal problem in a joint and cooperative manner within and across countries.

Source: World Bank Gender Data Portal.

Across the OECD, countries undertake efforts to raise the public profile of the people and organisations that produce and use policy-relevant evidence. The following provide examples that point to the importance of having a national data “champion”, a leader with a political support to engage stakeholders in a coherent open government data agenda.

- **United States:** The Government decided to take a very innovative approach, creating a new position – “Evangelist” – for its website, Data.gov, in order to facilitate OGD development and boost data use; a position currently held by Jeanne Holm from NASA.
- **France:** An acclaimed web entrepreneur, Séverin Naudet, was tasked to launch the central government’s open data efforts and reported directly to the Prime Minister. Such leadership would be key to realising the potential of public sector data in the UAE.
- Even though according to the results of the 2013 OECD OGD survey, it is not common yet for OECD countries to have established positions of Chief Data Officers (CDO), there are exceptions. Some countries, like **Mexico**, and in particular several large cities such as **Chicago, Philadelphia** and **New York**, have named CDOs. A CDO is a public officer responsible for government-wide governance and utilisation of information as an asset, via data processing, analysis, data mining information trading and other means. CDOs have various reporting lines including to the Chief Technology Officer (CTO), and/or the Chief Information Officer (CIO).

Finally, governments should take “open data” as an opportunity to improve their own statistical systems for policy and public service improvements. Governments in the OECD and beyond use the Internet to obtain data that can complement existing statistics. The vast amount of micro-level information received via digital channels helps government to identify so far unnoticed patterns and, if necessary, react quickly through changes in policy.

Examples include:

- the *Billion Prices* project in the *United States*, which uses the massive amount of publicly available data on product prices from online retailers to enhance economic policy research;
- *Mexico* and *Honduras*, where a customised version of the *Ushahidi* platform is used by public authorities to get real-time data on crime incidents via SMS, the Internet or smartphones¹¹.

Maximising OGD impact through social media

Across the world, citizens’ perception of government’s responsibilities towards them and how it should fulfill these responsibilities are significantly changing. We are assisting to a shift towards a more proactive and interactive culture where citizens take actions to engage with government authorities and participate in designing its policies and programs. Social media is believed to be an enabling tool used by the public in smart and effective ways to promote this shift.

Increasing use of social media in combination with OGD could be a particular focus of the Government. The UAE has favourable preconditions: a population that is apt to social media use (see example of Facebook penetration in MENA and GCC countries in Figure 7); and a government that engages in experimentation and developments in this area as illustrated by the fact that the UAE’s Prime Minister and Ruler of Dubai, Sheikh Mohammed comes second in popularity on Twitter among global heads of state or government (Table 1).

Figure 7. Facebook penetration in MENA and GCC countries

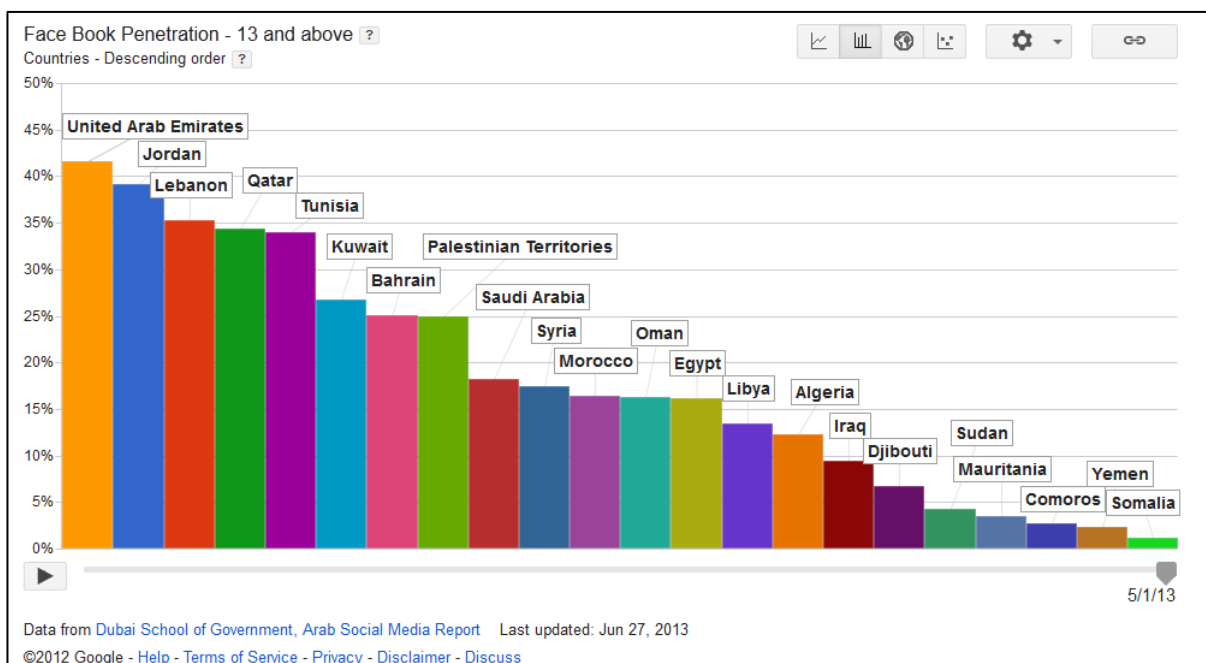


Table 1. Most popular government leaders on Twitter when accounting for population sizes, 2013

Government	Government leader account	Total Twitter followers	Twitter followers divide by population
Jordan	<i>Rania Al Abdullah</i>	2,803,845	44.4%
United Arab Emirates	<i>HH Sheikh Mohammed</i>	1,866,280	20.3%
United States	<i>Barack Obama</i>	33,510,157	10.7%
Panama	<i>Ricardo Martinelli</i>	346,787	9.1%
Maldives	<i>Mohamed Waheed</i>	24,608	7.3%
Ecuador	<i>Rafael Correa</i>	1,091,304	7.0%
Chile	<i>Sebastian Piñera</i>	1,064,164	6.1%
Malaysia	<i>Mohd Najib Tun Razak</i>	1,647,682	5.6%
Australia	<i>Kevin Rudd</i>	1,262,971	5.6%
Argentina	<i>Cristina Kirchner</i>	2,113,418	5.1%

Source: Author's calculations based on Twiplomacy, 2013.

However, as in other cases the use of social media guidance by the government focuses largely on technical assistance. The government could improve the impact of its social media presence through a determination of objectives at a strategic level, e.g. to improve public services and to increase the impact of open government data through social media, and by linking the use of social media to a broad strategy and/or policy on Open Government Data.

In order to fully capture the benefits of OGF in the UAE, the development and adoption of a clear strategy could help defining *who* shall benefit from open government data and social media trends. At the moment between 10 to 20% of the UAE population are citizens; the rest are international migrants, around half of which are highly-skilled “expats” and the other half low-skilled workers. The latter group could be vulnerable because of lack of language skills – most speak neither Arabic nor English – lower possibilities and rates of Internet access, and strong dependence on intermediaries for their economic or social inclusion.

Gender issues could be clarified in order to effectively use open government data for the purpose of inclusion and empowerment. The UAE has made strong advances to create gender-sensitive statistics. The fact that some key statistics and datasets of the public administration cannot be disaggregated by gender - e.g. on entrepreneurship, which risks undermining efforts for economic and social inclusion of women in the UAE - limits the possibility of using relevant data for effective evaluation of policies or policy outcomes.

Conclusions

We are experiencing a radical transformation in the volume of government data available today in open formats and the rapidity and means at which it is delivered to citizens. The use of technology and data analytics within the public sector, and the embedding of data analysis in policy making, performance assessment and design of public services, are boosting more integrated and innovative service delivery. This is quite important especially as societies expect governments to provide ever-increasing levels of public services at ever-decreasing costs while being given the opportunity to be part of the process. Additionally, advancements in new technologies, combined with open data, are increasing the potential for non-institutional actors and ordinary citizens to participate in the open data

movement and contribute to innovate the content and delivery of services in conjunction with their governments.

This Study has highlighted several of the potential benefits of Open Government Data for public sector innovation. Including:

- Innovating ordinary citizens' experience;
- Building the next generation of empowered civil servants;
- Innovating public procurement;
- Evolving public sector internal dynamics;
- Using predictive data analytics to spot trends and societal needs;
- Promoting collective learning, collective intelligence and social participation in service delivery and policy making.

Even though the implementation of many OGD initiatives is fairly recent it is already possible to identify some actions that could help governments to achieve better results. This Study has underlined in particular the need to partner with non-institutional actors and non-governmental organisations. Additionally, data re-use needs to be extensive which implies the public sector's capability to identify relevant data and present it in a way that can make them be understood. This is particularly relevant as access to data is not by itself sufficient to create some of the expected social and economic value. Converting greater accessibility to data into higher use is necessary to sustain the greater involvement and participation needed to maximize the benefits.

Additionally, public entities should not work in isolation in establishing goals and strategies for open data, in measuring impact and performance of open data programmes, and sharing results. This collective and joint approach can help comparing performance in relation to targeted goals and increase the impact of open data to boost innovation and increase performance. Most of these activities would also be relevant for the UAE to adopt in order to further advance the actions already taken to implement Open Government Data, in conjunction with the UAE's efforts to develop a culture of using empirical evidence to innovate and improve public policies' outcomes and quality of service delivery.

A thorough review of the context of implementation of open data in the UAE could aim to identify existing challenges for fully capturing the value of open data and spot possible ways to address them as part of a comprehensive strategy. This exercise could also help reviewing the existing set of open government data principles. The challenge is multi-faceted, it includes questions about dissemination (i.e. the formats in which data are made available) and quality of data (i.e. completeness and consistency). But it also requires mutually engaging approaches of government and non-government actors in learning how to understand the demand and needs of data users, how to make official data relevant for government and other audiences, and on how to provide incentives for data reuse from the various actors.

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⁷ See Telecommunications Regulatory Authority (2011).

⁸ http://egov.government.ae/c/document_library/get_file?uuid=30ad14da-681c-463a-a260-4b6131897d8d&groupId=11734

⁹ For more information see: <https://www.otakantaa.fi/fi-FI>.

¹⁰ The Open Data Institute was launched in the UK in December 2012 with the aim of incubating and nurturing new businesses wanting to harness open data, training and promoting standards. For more information see: www.theodi.org.

¹¹ An account of the CitiVox platform as it is being used in Mexico and Honduras: <http://archive.informationactivism.org/en/citivox>.



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www.oecd.org/gov/public-innovation/open-government-data.htm